

OSA-5255-63

3 October 1963

Dear Al:

As a result of the 26 September meeting on personal and life support equipment, several problem areas were clarified and responsibilities of contractors defined. Following is a recap of the conclusions of the meeting as they effect the Firewel Co.

Problem: Oxygen consumption vs. ships supply.

Discussion and action: It was agreed that 25 liters per minute be accepted as a base line from which to compute duration vs. supply. Cockpit pressurization at 26,000 ft. will remain the same. A failure of one system at mission mid-point is possible and sufficient oxygen must be available for safe return on the remaining system.

By the end of November of this year the larger oxygen bottles, 1100 cu. in. vs. the present 875 cu. in., will be installed. These bottles will be charged to 2800 PSI vs. the present 2000 PSI.

Problem: Readability of ships oxygen pressure gauge.

Action: A top priority item for Firewel Co. to provide a gauge that can be read quickly and accurately. LAC may have to relocate the gauge to eliminate parallax error.

Problem: Oxygen Equalizer Valve

Discussion: This device is required to insure that both ships oxygen systems bleed down together. To date, Firewel Co. has not been able to produce an acceptable valve.

Action: Firewel will continue working on the problem and LAC will try their own approach.

Problem: Vent flow back pressure in full pressure suit.

Action: Firewel will investigate change of flow at different detent positions on the flow controller. They will also investigate the bigger problem of why so much volume is required for adequate cooling. This problem has not been encountered in chamber runs.

Problem: Manual press to test.

Action: Item has met with pilot approval however, a more coarse control is desired - Firewel will provide.

Problem: Venthose disconnecting.

Action: Firewel procuring hoses that are two inches longer.

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Problem: Floating position of pilot in full pressure suit.

Discussion and Action: In a pool demonstration the subject was able to float in face down position. However, the parachute harness did not include the emergency oxygen pan or the automatic timer pan. Firewel to provide harness with these features plus a survival kit for future tests. Previous jump tests indicated proper floating position.

Problem: Release of emergency oxygen hose connection at suit controller.

Action: Firewel recently modified this connection which is being evaluated by the pilots.

It is hoped the above recap will serve as a guideline for your future effort.

Regards,

Harry C.

OSA-5254-63

4 October 1963

Dear Ed:

As a result of the 26 September meeting on personal and life support equipment, actions to be taken by several contractors were defined. The problems, discussion, and action as related to LAC are as follows:

Problem: Oxygen consumption vs. ships supply.

Discussion and action: It was agreed that 25 liters per minute be accepted as a base line from which to compute duration vs. supply. Cockpit pressurization at 26,000 ft. will remain the same. A failure of one system at mission mid-point is possible and sufficient oxygen must be available for safe return on the remaining system.

By the end of November of this year the larger oxygen bottles, 1100 cu. in. vs. the present 875 cu. in., will be installed. These bottles will be charged to 2800 PSI vs. the present 2000 PSI.

When the larger bottles, charged to the higher pressure, are installed a mission of eight hours and fifteen minutes is possible with failure of one system at mission mid-point. This assumes a consumption rate of 25 liters per minute.

The possibility of charging the bottles to 3000 PSI will be pursued by Firewel Co.

Problem: Readability of ships oxygen pressure gauge.

Action: A top priority item for Firewel Co. to provide a gauge that can be read quickly and accurately. LAC may have to relocate the gauge to eliminate parallax error.

Problem: Oxygen Equalizer Valve

Discussion: This device is required to insure that both ships oxygen systems bleed down together. To date, Firewel Co. has not been able to produce an acceptable valve.

Action: Firewel will continue working on the problem and LAC will try their own approach.

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Problem: Neck Seal vs. Face Seal in full pressure suit helmet.

Discussion: Two LAC pilots and two of our pilots have suits with the neck seal. Flights will continue with these garments to gather additional information regarding oxygen consumption and comfort.

Problem: Ejection Seat D Ring.

Discussion: A new D ring configuration was mocked up and checked with subject pressurized. The subject was able to reach the D ring under pressure, however, the back up system D ring was barely reachable.

Action: LAC will improve back up system D ring.

Problem: Location of visor heat control.

Action: Although this control has been moved forward four inches, the subject could not reach it when the suit was pressurized. LAC will attempt to make the control more accessible.

Problem: Leg stretch

Action: LAC will provide new rudder configuration that will allow full leg stretch when desired.

Problem: Lap belt failure.

Discussion: A lap belt failure in an ejection seat test at El Centro prevented dummy and seat separation. LAC investigated the problem and found that the force required to shear the pin varied from 450 PSI to 850 PSI. This was caused by pin heat treat which ranged from 55,000 PSI UTS to 110,000 PSI UTS.

Action: LAC is replacing the presently installed shear pin with one which has a controlled heat treat of 55,000 PSI UTS to 66,000 PSI UTS maximum.

Problem: Oxygen pressure warning light.

Discussion: Pilots desire an oxygen pressure warning light to indicate low breathing pressure or possibly both low and high oxygen pressure.

Action: LAC will investigate.

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A meeting of headquarters representatives will be held early next week regarding the present parachute and the integrated harness. I will keep you informed on the decisions reached.

Regards,

Harry C.